1. (Amended) An exposure apparatus in which an image of a pattern formed on a mask is projected onto a substrate via a projection optical system, comprising:

a substrate stage;

a reference plate on the substrate stage;

a first sensor having a projector and a receiver, which measures a gap in an optical axis direction between a surface of said substrate held by said substrate stage and a control target position during exposure of the substrate, and said first sensor also measures positional information of a surface of said reference plate in the optical axis direction; and

a second sensor having a reflector secured to said projection optical system and a bending reflection surface which directs a detecting light to the reflector, that detects a distance between said projection optical system and said substrate stage in the optical axis direction, wherein the substrate stage is positioned at a predetermined position while the first sensor measures the position of said reference plate and while the second sensor detects the distance.

2. (Amended) The exposure apparatus according to claim 1, wherein a positional relationship between the projection optical system and the surface of the substrate is adjusted based on the positional information of the reference plate measured by the first sensor and the distance detected by the second sensor.

3. (Amended) The exposure apparatus according to claim 2, wherein the control target position of the first sensor is corrected based on the positional information of the reference plate measured by the first sensor and the distance detected by the second sensor.

4. (Amended) The exposure apparatus according to claim 1, wherein said second sensor includes:

an interferometer unit that emits the detecting light, and receives a reflection light from the reflector so as to detect said distance.

5. (Amended) The exposure apparatus according to claim 4, wherein the substrate stage has an opening for the detecting light and the reflection light to transmit through.

6. (Amended) An exposure apparatus in which an image of a pattern formed on a mask is projected onto a substrate via a projection optical system, comprising:

a substrate stage;

a reference plate on the substrate stage;

a position measuring system which measures a position of a surface of said substrate held by said substrate stage in an optical axis direction of said projection optical system during exposure of the substrate, the position measuring system also measuring a position of a surface of the reference plate in the optical axis direction;

a moving system which moves said substrate stage in the optical axis direction based on a measurement result by the position measuring system; and

a correction system which measures a change of a distance between said projection optical system and said substrate stage in said optical axis direction and corrects a position of the surface of said substrate in said optical axis direction using said position measuring system and said moving system based on the measured change, and

wherein the substrate stage is positioned at a predetermined position while the position measuring system measures the position of the surface of the reference plate and while the correction system measures the change of said distance.

9. (Amended) The exposure apparatus according to claim 6, wherein said correction system comprises a sensor which measures a distance between a first reference

surface of said projection optical system and a second reference surface of said substrate stage to measure the distance between said projection optical system and said substrate stage.

10. (Amended) The exposure apparatus according to claim 9, wherein said first reference surface and said second reference surface are flat mirrors, and said sensor is an interferometer.

11. (Amended) The exposure apparatus according to claim 6, wherein an inclined state of said substrate stage is always the same when measuring the distance between said projection optical system and said substrate stage in said optical axis direction.

12. (Amended) An exposure apparatus in which an image of a pattern formed on a mask is projected onto a substrate via a projection optical system, comprising:

a substrate stage;

a reference plate on the substrate stage;

a position measuring system which measures a position of a surface of said substrate held by said substrate stage in an optical axis direction of said projection optical system during exposure of the substrate, the position measuring system also measures a position of a surface of the reference plate in the optical axis direction;

a moving system which moves said substrate stage in the optical axis direction based on a measurement result by the position measuring system; and

a correction system which measures a change of a distance between said position measuring system and said substrate stage in said optical axis direction and corrects a position of the surface of said substrate in said optical axis direction using said position measuring system and said moving system based on the measured change, and

wherein the substrate stage is positioned at a predetermined position while the position measuring system measures the position of the surface of the reference plate and while the correction system measures the change of said distance.

13. (Amended) A method of producing devices including exposing a substrate to at least one pattern image utilizing the exposure apparatus according to claim 1.

14. (Amended) A method of producing devices including exposing a substrate to at least one pattern image utilizing the exposure apparatus according to claim 6.

15. (Amended) A method of producing devices including exposing a substrate to at least one pattern image utilizing the exposure apparatus according to claim 12.

Please add the following claims 16-28:

--16. (New) An exposure apparatus in which an image of a pattern formed on a mask is projected onto a substrate via a projection optical system, comprising:

a substrate stage which is movable;

a reference plate on the substrate stage;

a first sensor system having a projector and a receiver, which measures positional information of a surface of said reference plate in an optical axis direction, said reference plate being under the projection optical system;

a second sensor system having a reflector secured to said projection optical system and a bending reflection surface on the substrate stage which directs a detecting light to the reflector, that detects positional information of the reflector in the optical axis direction; and

wherein the substrate stage is positioned at a predetermined position while the first sensor system measures said positional information of said reference plate surface and while the second sensor system detects said positional information of the reflector.--

--17. (New) The exposure apparatus according to claim 16, wherein a positional relationship between the projection optical system and a surface of the substrate is adjusted based on said positional information of the surface of the reference plate measured by the

first sensor system and said positional information of the reflector detected by the second sensor system.--

--18. (New) The exposure apparatus according to claim 17, wherein the second sensor system has an interferometer unit which receives a reflection light from said reflector in order to detect the positional information of the reflector in the optical axis direction.--

--19. (New) The exposure apparatus according to claim 18, wherein the substrate stage includes a table on which the substrate is held, a stage base, and a plurality of actuators which move the table relative to the stage base plate.--

--20. (New) The exposure apparatus according to claim 19, wherein the reference plate is on the table.--

--21. (New) The exposure apparatus according to claim 20, wherein the bending reflection surface is on the stage base plate.--

--22. (New) The exposure apparatus according to claim 20, wherein the second sensor system has a reflection member arranged on the table, and the interferometer unit receives the reflection light from the reflector secured to the projection optical system and a reflection light from the reflection member arranged on the table.--

--23. (New) The exposure apparatus according to claim 18, wherein the first sensor system measures a deviation between a target position and the surface of the reference plate as the positional information by projecting a measuring light onto the reference plate and by receiving a reflection light from the reference plate.--

--24. (New) The exposure apparatus according to claim 23, wherein the first sensor system also measures positional information of the surface of the substrate in the optical axis direction during exposure of the substrate.--

--25. (New) The exposure apparatus according to claim 18, wherein the interferometer unit includes a corner-cube reflection member which reflects the reflection light from the reflector via the bending reflection surface.--

--26. (New) The exposure apparatus according to claim 25, wherein the first sensor system also measures positional information of the surface of the substrate in the optical axis direction during exposure of the substrate.--

--27. (New) The exposure apparatus according to claim 18, wherein the first sensor system also measures positional information of the surface of the substrate in the optical axis direction during exposure of the substrate.--

--28. (New) A micro-device manufacturing method including exposing a substrate to at least one pattern image utilizing the exposure apparatus defined in claim 16.--

REMARKS

Claims 1-6 and 9-28 are pending. By this Amendment, claims 16-28 are added, claims 7 and 8 are canceled, and claims 1-6 and 9-15 are amended. The title also is amended. The claims are amended to address the rejection under 35 U.S.C. §112, second paragraph, to more clearly distinguish the claims over the applied reference to Loopstra et al., to be discussed below, and to improve the grammar of the claims. The amendments to the claims are supported throughout the specification. See, for example, page 11, line 20 - page 12, line 1, page 17, line 17 - page 18, line 15 and page 18, line 19 - page 19, line 24. Thus, no new matter is added by the above amendments. The attached Appendix includes a marked-up copy of each rewritten paragraph (37 C.F.R. §1.121(b)(1)(iii)) and claim (37 C.F.R. §1.121(c)(1)(ii)).

I. Claim for Priority

A Claim for Priority along with certified copies of the priority applications (Japanese Applications 11-265669 and 2000-259147) were filed on November 16, 2000. Upon review